

**WORK PLAN**  
**FOR**  
**WORK ASSIGNMENT NO. SERAS-130**  
**AMENDMENTS NO. 1 AND 2**  
**CABO ROJO**  
**April 13, 2012**

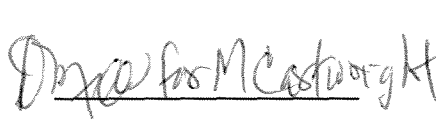
**AMENDED WORK PLAN  
CABO ROJO**

**Prepared for  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)/  
ENVIRONMENTAL RESPONSE TEAM (ERT)**

**Date:** April 13, 2012  
**Contract No:** EP-W-09-031  
**Assignment No.:** SERAS-130.2

**Approval:**

**Task Leader**

 **Date:** 4/20/12

**SERAS Group Leader**

 **Date:** 4/20/12

**Program Manager**

 **Date:** 4/20/12

**Lockheed Martin SERAS  
GSA Raritan Depot  
2890 Woodbridge Avenue  
BLDG. 209 Annex  
Edison, New Jersey 08837-3679**

<b>Work Assignment Number:</b>	<b>SERAS-130.2</b>
<b>Work Assignment Title:</b>	<b>Cabo Rojo</b>
<b>Work Assignment Manager:</b>	<b>Jeff Catanzarita</b>
<b>Lockheed Martin SERAS Task Leader:</b>	<b>Michael Cartwright</b>
<b>Duration:</b>	<b>April 6, 2011 through September 22, 2012</b>
<b>Contract Number:</b>	<b>EP-W-09-031</b>
<b>Site ID:</b>	<b>A244</b>

## INTRODUCTION

**Purpose.** Under the original work assignment (WA), Lockheed Martin (LM) Scientific, Engineering, Response & Analytical Services (SERAS) personnel provided technical support to the Environmental Protection Agency/Environmental Response Team (EPA/ERT) and EPA Region 2 to conduct a preliminary remedial investigation (RI) in the town of Cabo Rojo, Puerto Rico (PR). The objectives of the RI were to confirm or negate possible sources of groundwater contamination and collect groundwater samples for a RI Risk Assessment (RA).

Under WA amendments 1 and 2, SERAS personnel will provide assistance to the ERT and Region 2 to perform a high priority vapor intrusion investigation in the vicinity of the Cabo Rojo site (Site). This amended Work Plan (WP) includes the installation of sub-slab soil gas wells, the collection of sub-slab soil gas and indoor air samples using SUMMA<sup>®</sup> canisters, and the analysis of the SUMMA<sup>®</sup> canisters at the ERT/SERAS Laboratory. The WA amendments require rapid deployments; therefore, this amended WP was prepared after the completion of the first field sampling and laboratory analysis event. Work will be carried out by SERAS personnel in consultation with the ERT Work Assignment Manager (WAM).

**Background.** The Site consists of a groundwater plume in Cabo Rojo, PR where there is no identified source(s) of contamination. The public water system (PWS) is threatened by a groundwater plume that exhibits the presence of the chlorinated solvents tetrachloroethene (PCE) and trichloroethene (TCE). The aquifer is the main source of potable water for the municipality of Cabo Rojo. The PWS has been threatened with the presence of different contaminants forcing the local publicly owned treatment works (POTW) to close about nine wells in the last 10 years, losing a valuable resource. Currently, the PWS consists of six wells and three of the wells contain PCE and TCE below the maximum contaminant level (MCL) for drinking water. Groundwater samples collected at three potentially responsible party (PRP) locations revealed the presence of PCE and TCE at concentrations as high as 310 parts per billion (ppb). PCE and its breakdown products have also been detected in the aquifer at lower concentrations.

**Assumptions.** Assumptions concerning the scope of work, deliverables and task dates, and cost were made on the basis of existing knowledge of the Site and similar work done on other sites. A generic approach to the investigation is presented in this document. The results of the scoping meeting and Site visit, new information and data, additional tasks and events outside SERAS control may result in revisions to the approach and schedule proposed in this amended WP. Changes in project schedule, SERAS project priorities and resource availability may also affect the specific details of this amended WP. Also, the cost estimated to complete this project (including but not limited to, labor, travel, materials, subcontractors and analyses) may change as the project evolves. The WAM will serve as the liaison to the general public and other agencies.

## TECHNICAL APPROACH

Under amendments 1 and 2, SERAS personnel were tasked to accomplish additional activities outlined in Tasks 8 and 9. Activities outlined in Tasks 1, 5 and 7 are ongoing. Tasks 2, 3, 4 and 6 were completed under the original WA.

**Task 1: Project Administration.** The SERAS Task Leader (TL) will schedule, organize and manage the project. The following documents were developed under the original WA: WP, Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) and Health and Safety Plan (HASp). Each document will be amended or updated under the WA amendments. The TL will be responsible for procuring subcontractors for utility markouts and drilling/sampling. All numerical data will be imported into the project-specific Scribe® database. Upon notification from the WAM, requesting property owners will be placed on the LM insurance certificate within 15 calendar days.

**Task 2: Soil Gas Sampling.** Under the original WA, SERAS personnel conducted a comprehensive soil gas investigation in an attempt to locate possible sources of PCE/TCE groundwater contamination. About 25 sub-slab and 35 subsurface soil gas ports were installed. Soil gas samples were collected in 1-liter (L) Tedlar® bags and screened on-site using a field portable Voyager GC system for PCE, TCE and cis-1,2-dichloroethene (DCE). SERAS personnel collected grab soil gas samples at a rate of 10 percent (%) into SUMMA® canisters from locations chosen by the WAM. All subsurface soil gas locations were documented using global positioning system (GPS) technology.

**Task 3: Soil Sampling.** Under the original WA, if a significant source of PCE, TCE and/or cis-1,2-DCE was found during the soil gas investigation, SERAS personnel were prepared to collect up to 20 soil samples using direct push technology to a depth of up to 20 feet. No soil samples were collected.

**Task 4: Water Sampling.** Under the original WA, SERAS personnel were prepared to sample pre-established monitor wells and drinking water wells chosen by the WAM using low-flow procedures. No water samples were collected.

**Task 5: Chemical Analyses.** The UFP-QAPP was written such that the ERT/SERAS Laboratory in Edison, New Jersey (NJ) will be the laboratory performing all analyses for this project. Under the original WA, no labor hours were included in the cost estimate for laboratory analyses. These were to be added as needed based on the field investigation. Prior to the collection of the samples, SERAS personnel provided the WAM with labor estimates for the analysis and validation of the samples. Under the original WA, only soil and groundwater samples were validated. Any samples collected and analyzed on-site as screening samples were not validated.

Soil gas, indoor and ambient air samples collected in SUMMA® canisters will be validated under WA amendments 1 and 2. Up to 180 SUMMA® canister samples will be submitted to the ERT/SERAS Laboratory for trace level volatile organic compound (VOC) analysis using EPA Method Toxic Organic (TO-15), *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, and results will be reported in both micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and parts per billion by volume (ppbv).

Under WA amendment 1, SUMMA® canister sample results were reported with final reporting limits (RLs) of 0.070 ppbv. The target compound list (TCL) for select SUMMA® canisters included the full TO-15 list, while the remainder included only PCE, TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-dichloroethane (DCA), 1,2-DCA and vinyl chloride.

Under WA amendment 2, SUMMA® canister sample results will be reported with final RLs of 0.070 ppbv for soil gas samples and 0.030 ppbv for indoor and ambient air samples. The TCL for all SUMMA® canisters includes PCE, TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-DCA, 1,2-DCA and vinyl chloride, and select samples also included chloroform, benzene, toluene, ethyl benzene, methylene chloride and 1,2,4-trimethylbenzene.

**Task 6: Conceptual Site Model.** Under the original WA, a conceptual site model (CSM) was to be

constructed using United States Geological Services (USGS) resources, site field data and other available data if requested by the WAM. CSM construction has not been requested.

**Task 7: Reports.** Under the original WA, a draft trip report including text, map, and figures was prepared and submitted to the WAM. A final trip report was submitted within 5 working days following receipt of comments from the WAM. Hard copies as well as electronic copies of the report were provided to the WAM for distribution to EPA Region 2. An additional trip report detailing the tasks and results of the activities performed under WA amendments 1 and 2 will be prepared and submitted to the WAM.

In conformance with the requirements of the SERAS contract, all environmental data was provided in an electronic data deliverable (EDD) compatible with Scribe®. All deliverables and other relevant project information will be submitted in electronic format to the WA ERT-Information Management System (IMS) website.

**Task 8: Sub-Slab Soil Gas Sampling.** Sub-slab soil gas wells were installed by SERAS personnel at 19 locations during the week of February 27, 2012 under amendment 1 and will be installed at up to 60 locations under amendment 2. The sub-slab soil gas wells were or will be installed at locations chosen by the ERT WAM onsite. The sub-slab soil gas wells were or will be installed flush with the building slab and capped with a Teflon® coated fitting that was or will be removed during sampling operations, in accordance with SOP #2082, *Construction and Installation of Permanent Sub-Slab Soil Gas Wells*.

SERAS personnel collected or will collect 24-hour soil gas samples from each sub-slab soil gas well using SUMMA® canisters. Each SUMMA® canister was or will be equipped with a restrictive orifice set at a constant flow rate to collect between 4- and 5-L of sample during the 24-hour sampling period. All SUMMA® canisters and orifices, provided by the laboratory, will be individually certified clean below the RL. Samples were or will be analyzed as outlined in Task 5.

**Task 9: Indoor and Ambient Air Sampling.** Concurrent with sub-slab soil gas sampling, SERAS personnel collected 24-hour samples from 18 indoor air locations and 10 ambient air locations during the week of February 27, 2012 under WA amendment 1. Under WA amendment 2, 24-hour SUMMA® canister samples will be collected from up to 60 indoor air locations and up to 10 ambient air locations. Where possible, each building will have all lifestyle substances (possible chemical sources) removed and will be closed for 24 hours prior to the sampling event. Any chemical sources that remain in the buildings during the sampling event will be documented. The sampling locations were or will be determined by the ERT WAM onsite. A collocated sample was or will be collected for every 10 indoor air samples or a minimum of one per day.

SERAS personnel collected or will 24-hour soil gas samples from each indoor and ambient air location using SUMMA® canisters. Each SUMMA® canister was or will be equipped with a restrictive orifice set at a constant flow rate to collect between 4- and 5-L of sample during the 24-hour sampling period. All SUMMA® canisters and orifices, provided by the laboratory, will be individually certified clean below the RL. Samples were or will be analyzed as outlined in Task 5.

**Quality Assurance Project Plan.** Project management, measurement, assessment and usability elements applicable to this WA are included in the corresponding site-specific UFP-QAPP.

**Standard Operating Procedures.** Standard Operating Procedures (SOPs) and Administrative Procedures (APs) relevant to this WA are included in the site-specific UFP-QAPP. SERAS personnel will adhere to the following health and safety SOPs for this WA:

SOP #3001, *Health and Safety Program Policy and Implementation*

## STAFFING PLAN AND SCHEDULE

**Staffing Plan.** The TL will maintain contact with the WAM to provide information on the technical and financial progress of the project. This will commence with the issuance of the WA and project scoping meeting. Activities will be summarized in appropriate format for inclusion in SERAS monthly reports.

The original WA was received on April 7, 2011. WA amendment 1 was received on February 24, 2012, and WA amendment 2 was received on April 4, 2012. This amended WP was initiated within 20 days after receiving WA amendment 2. The project will be completed by September 22, 2012.

The TL/QC Coordinator is the primary point of contact with the WAM. The TL is responsible for preparation of the WP and QAPP, project team organization and supervision of all project tasks including reporting and deliverables. In addition, the TL is responsible for ensuring field adherence to the WP and QAPP and recording any deviations on the Work Assignment Field Change Form.

The Quality Assurance/Quality Control (QA/QC) Officer, Health and Safety Officer (HSO), Air Group Leader and Program Manager are responsible for auditing and guiding the project team, reviewing/auditing the deliverables and proposing corrective action, if necessary, for nonconformity to the WP, UFP-QAPP or HASP.

The following SERAS personnel will provide support for the WA:

<u>Personnel</u>	<u>Responsibility</u>	<u>Level</u>
Project Engineer	Initial TL- Preliminary RI; Project Management	****
Environmental Scientist	TL/Project Management; Deliverable Preparation	**
	Soil Gas Well Installation; Soil Gas/Air Sampling	
Environmental Scientist	Soil Gas Well Installation; Soil Gas/Air Sampling	***
Environmental Scientist	Soil Gas Well Installation; Soil Gas/Air Sampling	**
Environmental Technician	Soil Gas and Soil Sampling	#
Sr. GC/MS Chemist	Onsite Soil Gas Analysis; Soil Gas/Air Analysis	****
Air/Response Chemist	Project Oversight; Soil Gas/Air Sampling	****
Program Manager	Deliverable Review; Project Oversight	****
QA/QC Officer	Deliverable Review; Validation Oversight	****
Health and Safety Officer	HASP Review/PPE Selection; H&S Oversight	****
Deputy Program Manager	Deliverable Review	***
GC/MS Chemist	Analysis of Soil Gas and Air Samples	***
GC/MS Chemist	Analysis of Soil Gas and Air Samples	**
QA/QC Chemist	Data Review and Validation	***
Report Writer	Analytical Report/EDD Preparation	***
Sample Receiving Chemist	Sample Receipt/Login; SUMMA Canister Cleaning	**
Sample Extraction Chemist	SUMMA <sup>®</sup> Canister Cleaning	**
AutoCAD/GIS	Figure/Map Preparation	***
Hydrogeologist	CSM Development	***
Business Manager	TCE Preparation/Financial Oversight	***
Clerical	Deliverable Preparation/Archival	#
Administrative Support	Logistical and Administrative Support	**
Purchasing/Procurement	Purchase Materials and Services	***

Additional SERAS technical and/or administrative personnel may work on this project as needed.

**Schedule of Activities.** The anticipated schedule of activities is as follows:

<u>Deliverable ID</u>	<u>Item</u>	<u>Date</u>
130-001	UFP-QAPP	June 6, 2011
130-010	UFP-QAPP, Amendment 1	February 27, 2012
130-002	WP	May 2, 2011
130-009	WP, Amendment 2	April 24, 2012
130-003	HASP	June 10, 2011
130-011	HASP Modification 1	February 23, 2012
130-012	HASP Modification 2	March 13, 2012
NA	Field Activities	Week of June 13, 2011
NA	Field Activities- Amendment 1	Week of February 27, 2012
NA	Field Activities- Amendment 2	21 days after first trip completion
130-004	Preliminary Data	July 12, 2011
130-013	Preliminary Data, Amendment 1	March 6, 2012
130-014	Preliminary Data, Amendment 1	March 15, 2012
130-017	Preliminary Data, Amendment 2	10 BD after sample receipt
130-018	Preliminary Data, Amendment 2	10 BD after sample receipt
130-005	Analytical Report	NA- Preliminary data only
130-015	Analytical Report, Amendment 1	March 12, 2012
130-016	Analytical Report, Amendment 1	March 19, 2012
130-019	Analytical Report, Amendment 2	10 BD after receipt of data package
130-020	Analytical Report, Amendment 2	10 BD after receipt of data package
130-006	Draft Trip Report	January 13, 2012
130-007	Final Trip Report	February 16, 2012
130-021	Draft Trip Report, Amendment 2	20 BD after receipt of last sample
130-022	Final Trip Report, Amendment 2	5 BD after receipt of WAM's comments
130-008	CSM	To Be Determined

All project deliverable dates are estimated based on the information available at the time of amended WP completion. New information, additional tasks and events outside SERAS control may result in revisions to these dates.

All environmental sampling data will be provided in an EDD compatible with Scribe®. All deliverables will be submitted in electronic format to the WA ERT-IMS website.

**Training and Conference, Meeting, Seminar Attendance.** In the course of performing the above tasks, SERAS personnel may attend training offered by the EPA such as safety training, training for procedural changes made by the EPA or training offered by outside vendors of specific equipment or instrumentation. Specific training will be authorized in advance by the ERT/SERAS Project Officer and approved by the Contracting Officer. As authorized by the Project Officer and approved by the Contracting Officer, SERAS personnel may attend a technical conference, meeting, or seminar to perform or support work assignment activities. For the ERT to successfully fulfill their mission to share and disseminate scientific information, SERAS personnel will provide technical support to prepare (and present as necessary) technical papers or posters at scientific meetings or conferences.

## LEVEL OF EFFORT AND COST PROJECTIONS

The estimated cost (including level of effort (LOE hours), travel, materials, equipment and analytical services) to complete this project through September 2012 is given in the attached cost summary sheet. Photo-documentation, computer graphics and support, report preparation and purchasing support will be required to accomplish WA objectives. LOE for these activities are included in the attached cost summary.

**Purchased Services.** Under the original WA, utility clearance and Geoprobe drilling services were required at an estimated cost of \$25,000. No purchased services are required under WA amendments 1 and 2.

**Travel Assumptions.** Travel Assumptions are as follows for the original WA and amendment 1 and 2:

Number of trips from Edison NJ to Cabo Rojo, PR.	3
Number of days per trip	5- First Trip 6- Second Trip 6- Third Trip
Number of personnel per trip	5- First Trip 2- Second Trip 4- Third Trip